

Notice of Allowability

Application No.

10/750,015

Examiner

Alan Diamond

Applicant(s)

MCFARLAND, ERIC W.

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the after-final amendment filed December 7, 2004.
2. ☒ The allowed claim(s) is/are 103, 104, 106, 111-125 and 128.
3. ☒ The drawings filed on 31 December 2003 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: Skotheim (U.S. Patent 4,442,185) is the closest prior art. Instant claims 111-123, 125, and 128 require that the conducting layer, which is an ultra-thin metal film, and the charge separation layer define a Schottky barrier; and that said conducting layer provides ballistic transport of charge carriers from the light conversion layer to the charge separation layer which eliminates the need for an electrolyte when producing electrical power from light that impinges upon the light energy conversion layer. Skotheim does not teach or suggest an ultra-thin metal film conducting layer that forms a Schottky barrier with a charge separation layer. Skotheim teaches an ultra-thin platinum film between n-type layer (131) (i.e., the light energy conversion layer) and highly conductive layer (134) (see Figure 13; and the paragraph bridging cols. 15 and 16). The platinum film maybe could form an n-barrier with highly conductive layer (134), which is actually a blend of a highly conductive polymer and a solid polymer electrolyte (col. 15, lines 33-50), but does not form such a barrier. Said platinum layer does not form a Schottky barrier with p-type layer (132), which is the charge separation layer. Even if n-type layer (131) was the charge separation layer, there would be no Schottky barrier between the n-type layer and the platinum layer. Skotheim teaches that there may be an additional layer of platinum, chromium or other metal (col. 16, lines 30-36), but there is nothing that leads a skilled artisan to the claimed invention.

Skotheim also does not teach or suggest a conductive layer and a charge separation layer define a metal-insulator-metal junction, as per instant claim 103.

Instant claim 104 is distinguished from Skotheim since it requires that the charge separation layer comprises a semiconductor of a type, and the device further includes a semiconductor of the opposite type positioned between the charge separation layer and the conducting layer to provide an increased barrier height and photovoltage. Instant claims 106 and 124 are distinguished from Skotheim since they require that the charge separation layer comprises an insulator/semiconductor multi-layer.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Diamond whose telephone number is 571-272-1338. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alan Diamond
Primary Examiner
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A handwritten signature in black ink, appearing to read "Alan Diamond", with a stylized flourish at the end.

Alan Diamond
December 15, 2004